

ISS conference touts accomplishments, Alpha Magnetic Spectrometer

English.news.cn 2013-07-19 18:28:06

DENVER, United States, July 18 (Xinhua) -- An annual International Space Station (ISS) R&D conference ended Thursday in Denver with NASA and its affiliates trumpeting a long list of accomplishments during the past year.

Saving the best for last, Dr. Samuel Chao Chung Ting, Massachusetts Institute of Technology professor and 1976 Nobel Prize Laureate for Physics, gave attendees a first-ever video overview of the Alpha Magnetic Spectrometer (AMS), a state-of-the-art cosmic ray particle detector, built in China and delivered to the ISS in 2011.

"In the Big Bang Theory, the universe creation required the same amount of matter and anti-matter...so where is the anti-matter universe?" Ting asked, revealing new information about the AMS and its function.

"This is a new instrument to search for phenomenon in the universe not yet discovered and imagined," said Ting, who noted the AMS measured 35 billion "events" in an 18-month period since being operational on the station, collecting data from cosmic sources emanating from stars and galaxies millions of light years beyond the Milky Way.

Studies measuring carbon, helium and other elements show consistent fluctuations and "require time to collect consistent data," Ting said. "There's nothing we can do but wait. This collection of data includes all of the elements of the Periodic Table," he added.

The AMS is the largest and most advanced magnetic spectrometer ever created for space. With visible matter in the universe totaling only five percent of the total mass known to exist, scientific exploration in this field is just beginning.

Ting, whose family originates from China's Shandong Province, is spearheading the 2-billion-U.S.-dollar project that involves 500 scientists from 56 institutions and 16 countries. The AMS houses 1,180 temperature sensors, 10,800 photo sensors and 212 computers.

It has been a year since NASA and its newly created partner, the Center for the Advancement of Science in Space, announced an ambitious plan to attract private and scientific sector participation in the station that was launched in 2000.

"Unlike last year, this conference is showcasing what we've actually accomplished," said James Kirkpatrick, executive director of the American Astronautical Society, the organization hosting the conference. "Real results are coming out of the ISS."

Three scientists, who were given "Top Discovery" awards on the ISS in 2012, gave presentations at the conference on research conducted during the past year aboard the station.

Thomas Lang, professor of Radiology and Biomedical Imaging at the University of California San Francisco, received a team award for his work on preventing bone loss. The new study revealed that astronauts on the station suffered an average of 10.8 percent bone loss, and after returning to Earth, only regained 8.1 percent of their lost bone mass back.

"With this research, we can better understand bone changes throughout life, in growth and aging, and how to prevent outcomes such as age-related bone fractures," said Lang.

Another award-winning experiment called "Cool Flames" showed how fire can burn with low heat and little flame in space.

Vedha Nayagam of the National Center for Space Exploration Research at Case Western Reserve University discovered that small droplets of heptane burning inside the Flame Extinguishment Experiment combustion chamber continued to burn fuel even when the flame seemed to be out.

And Millie Hughes-Fulford from San Francisco Veterans Administration Hospital and University of California San Francisco found that astronauts' immune systems weaken when they return to Earth, making them more vulnerable to sickness. It was one specific transmitter in immune cells that stopped working in weightlessness that caused the problem, Hughes-Fulford's research discovered.

"Every aspect of human biology can be explored in space," said Nicole Buckley, chief scientist for Life Sciences at the Canadian Space Agency.

Source: English News 2013-07-19 18:28:06

http://news.xinhuanet.com/english/world/2013-07/19/c_132556773.htm